PATENT ABSTRACTS OF JAPAN

(11)Publication number :   05-089165

(43)Date of publication of application : 09.04.1993

(51)Int.Cl.   G06F 15/38

(21)Application number : 03-252554

(22)Date of filing :   30.09.1991

(71)Applicant :   TOSHIBA CORP

(72)Inventor :   YOSHIMURA YUMIKO
HIRAKAWA HIDEKI
KUMANO AKIRA
KIMURA MARIKO

(54) MACHINE TRANSLATION SYSTEM

(57)Abstract:

PURPOSE: To obtain the translated sentence of expression which a user desires and to reduce the labor of reediting by giving selection right as to what kind of processing a system is required to execute to the user when there is variation in an expression method.

CONSTITUTION: A machine translation system translating the sentence of given first language into the sentence of second language by using knowledge information for translation-processing is provided with a translation expression designation control part 6 which controls a processing on the selection and designation of translated expression and controls the processing in a translation part 5 and a translated condition storage part 11. The translation part 5 can translate an original sentence in accordance with a condition which is set in the translated condition storage part 11. The processing which the system has to take is previously selected and designated among the variation as to the perfect form/progressive form of Japanese expression '...teiru/being...' in Japanese/English translation, the translated expression of '...sareta/has been...' and the translated expression of '...nadono/and the like...' and according to the selected processing, the translation processing is controlled.
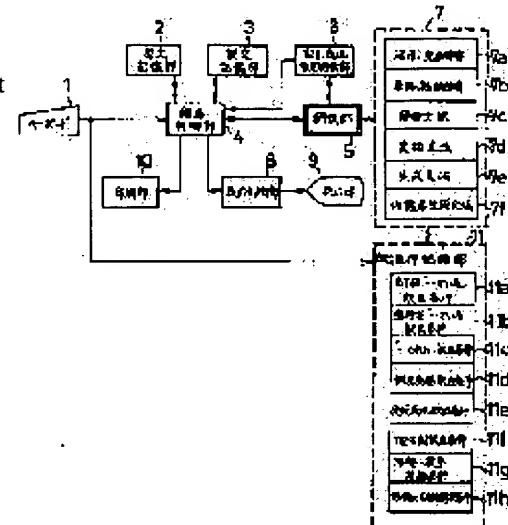
LEGAL STATUS

[Date of request for examination]   30.09.1998

[Date of sending the examiner's decision of rejection]   16.07.2002

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

CLAIMS

[Claim(s)]
[Claim 1] The machine translation system characterized by to establish and constitute a translation expression conditioning means set up the conditions about a translation expression, and an expression conversion means change a decodement into the translation expression by this set-up condition, in the machine translation system which translates the text of the first language given into the text of the second language using the knowledge information for translation processing.

[Claim 2] In the machine translation system which translates the text of the first language given into the text of the second language using the knowledge information for translation processing while making Japanese into the first language "-- ******" ****** [in the Japanese text] When the becoming description expression expresses the completion condition, the completion phase "-- ******" which uses this for an expression with the second language -- the 1st considerable desired contents of translation -- "-- ******" ****** [in the Japanese text] When the becoming description expression expresses the advance condition, the progressive aspect "-- ******" used for an expression with the second language -- the 2nd considerable desired contents of translation -- "-- in the Japanese text -- it was carried out -- " -- "-- used for applicable expression translation with the second language of a description expression -- it was carried out -- " -- the 3rd considerable desired contents of translation -- As opposed to other description expressions equivalent to the description expression and this instantiation expression [in the Japanese text] "-- --" etc. becoming employment expression [in the contents of instantiation expression translation of the request used for applicable expression translation with the second language, and the Japanese text] "-- (**) ****" - "-- (**) **" -- the 4th contents of translation of the request of the employment expression concerned used for applicable expression translation with the second language of a description expression -- A translation expression conditioning means to set up at least one of the 5th contents of translation of the request used for applicable expression translation with the second language as translation conditions to the description expression which consists of a "SA strange noun + transitive verb" in the Japanese text, The machine translation system characterized by establishing and constituting the expression conversion means which carries out transform processing of the applicable part in a decodement to the translation expression by this set-up condition.

[Claim 3] In the machine translation system which translates the text of the first language given into the text of the second language using the knowledge information for translation processing while making a native language into the first language and making a foreign language into the second language A translation expression conditioning means to set up the abbreviation and figure connection conditions of whether to make it accompanied by the tooth space between words as translation conditions in case the ending makes a figure follow a translation with the gestalt of the abbreviation finished as a period and generates, The machine translation system characterized by establishing and constituting the expression conversion means which carries out transform processing of the applicable part in a decodement to the translation expression by this set-up condition.

[Claim 4] In the machine translation system which translates the text of the first language given into the text of the second language using the knowledge information for translation processing while making a foreign language into the first language and making a native language into the second language The translation expression conditioning means which carries out a selection setup of whether whether the word of the abbreviation notation in the text by the first language being considered as the abbreviation notation of a sale order online processing system and isomorphism voice and an abbreviation are changed into the translation which consists of a native language character string corresponding to what was changed into full spelling, The machine translation system characterized by establishing and constituting the expression conversion means which carries out transform processing of the applicable part in a decodement to the translation expression by this set-up condition.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The block diagram showing the whole machine translation system configuration concerning one example of this invention.
[Drawing 2] The top view showing the keyboard layout of the above-mentioned system.
[Drawing 3] Drawing showing an example of the layout of the dialogue screen of the display of the above-mentioned system.
[Drawing 4] The flow chart which shows an example of the flow of processing of the edit control section of the above-mentioned system

[Drawing 5] The explanatory view showing an example of the screen to which selection and assignment of the translation approach in case a Japanese expression "-- ******" expresses a completion phase are urged.
[Drawing 6] The explanatory view showing an example of the screen to which selection and assignment of the translation approach in case a Japanese expression "-- ******" expresses a progressive aspect are urged.
[Drawing 7] Japanese expression "-- it was carried out -- " -- the explanatory view showing an example of the screen to which selection and assignment of the translation approach are urged.
[Drawing 8] The explanatory view showing an example of the screen to which selection and assignment of a Japanese expression "-- --" etc. of the translation approach are urged.
[Drawing 9] the explanatory view showing an example of the screen to which selection and assignment of Japanese expression "-- (**) ****" - "-- (**) **" (employment expression) of the translation approach are urged.
[Drawing 10] The explanatory view showing an example of the screen to which selection and assignment of that Japanese expression " "a SA strange noun" is performed" (and expression according to this) of the translation approach are urged.
[Drawing 11] The explanatory view showing an example of the screen to which the selection and assignment of the expression approach at the time of the ending making a figure follow the English Version word with the gestalt of the abbreviation finished as the period, and generating are urged.
[Drawing 12] The explanatory view showing an example of the screen to which selection and assignment of a word with the gestalt of abbreviations, such as an acronym, of the translation approach are urged.
[Drawing 13] The flow chart which shows the flow of the processing in the translation section of the above-mentioned system.
[Description of Notations]
1 [-- Edit control section,] -- A keyboard, 2 -- The text storage section, 3 -- The translation storage section, 4 5 [-- An activity, a change dictionary,] -- The translation section, 6 -- A translation expression assignment control section, 7 -- The translation dictionary section, 7a 7b [-- Generative grammar,] -- A word, a word dictionary, 7c -- Analysis syntax, 7d -- Conversion syntax, 7e 7f [-- Printing section,] -- Morphological generative grammar, 8 -- A display and control section, 9 -- A display, 10 11 -- The condition storage section, 11a -- The memory area of completion phase "-- ******" translation conditions, the memory area of 11b-- progressive aspect "-- ******" translation conditions, and 11c-- "-- the memory area of" translation conditions carried out -- 11d [-- The memory area of an abbreviation and figure connection ******, 11h / -- Memory area of the word-selection conditions of an abbreviation.] -- The memory area of instantiation expression translation conditions, 11e -- The memory area of employment expression translation conditions, 11f -- The memory area of SA strange noun translation conditions, 11g

[Translation done.]
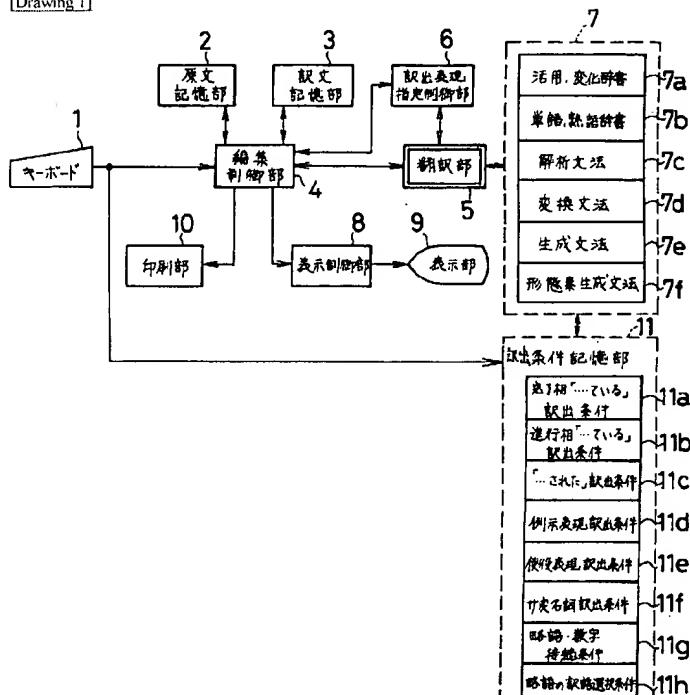
DRAWINGS

[Drawing 1]

[Drawing 2]

[Drawing 3]

[Drawing 4]

START

S401 翻訳完了? —YES→ S412 訳文表示

NO

S402 翻訳指示キー? —YES→ S411 翻訳開始

NO

S403 文字キー? —YES→ S409 原文を入力バッファにセット

NO

S404 編集キー? —YES→ S410 原文表示

NO

S405 機能キー? —YES→

NO

S408 その他の処理   S406 機能キーに対応する処理   S407 編集処理
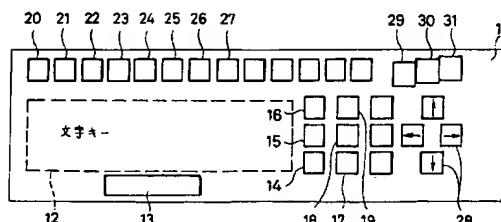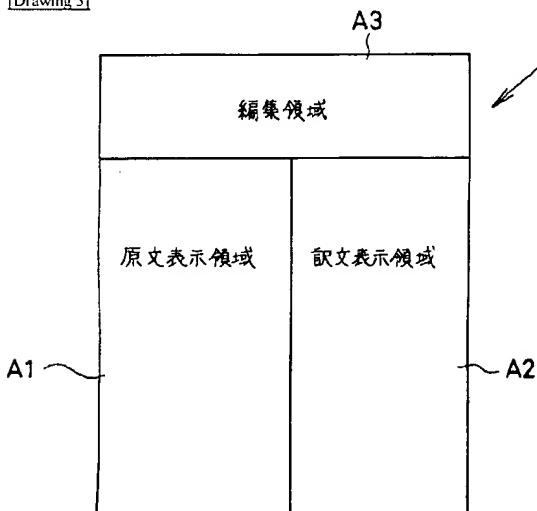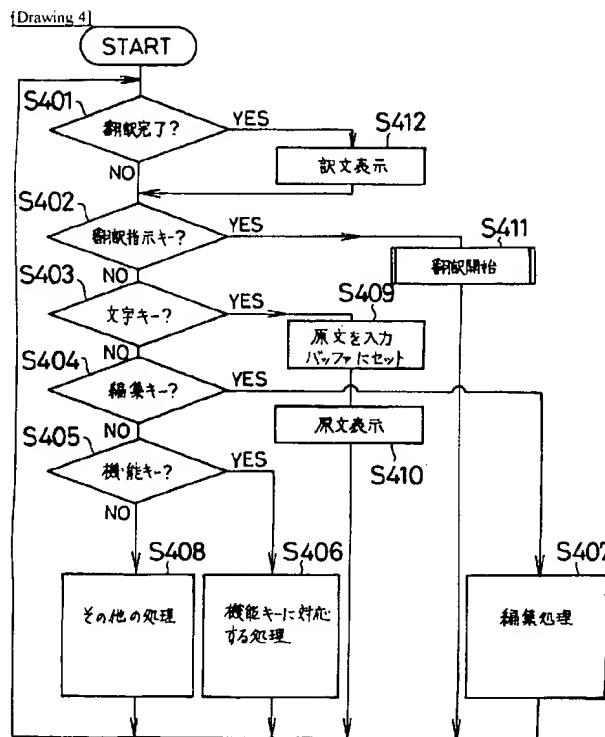
[Drawing 5]

9B

完了状態を表す表現「…ている」の訳出表現を指定して下さい。

■ 完了形

□ 現在形

[Drawing 6]

9C

進行状態を表す表現「…ている」の訳出表現を指定して下さい。

■ 進行形

□ 現在形

[Drawing 7]

9D

「…された」の訳出表現を指定して下さい。

■ 過去形

□ 現在形

[Drawing 8]

9E

例示表現 「…などの…」 の訳出表現を指定して下さい。

■ ----, such as ----

☐ --- (--- , etc.)

☐ ----, for example, ----

☐ ----, e.g., ----

☐ ----, that is, ----

☐ ----, for instance, ----

[Drawing 9]

9F

使役表現 「…(さ)せる」・「…(さ)す」の訳出表現を指定して下さい。

■ 使役動詞を用いる

☐ 使役動詞を用いない

[Drawing 10]

9G

「『サ変名詞』を行う」の訳出表現を指定して下さい。

■ 『サ変名詞』を動詞化して訳出する

☐ 「他動詞＋動作名詞」の形態で訳出する

[Drawing 11]

9H

語尾がピリオドの略語訳語と後続の数字との間の接続方法を指定して下さい。

■ ブランクあり

☐ ブランクなし

[Drawing 12]

9I

略語の原語に対する訳語の形態を指定して下さい。

■ システムが判断する

☐ 原語と同形態の略語を優先する

☐ 日本語文字よりからなる非略語を優先する。

[Drawing 13]
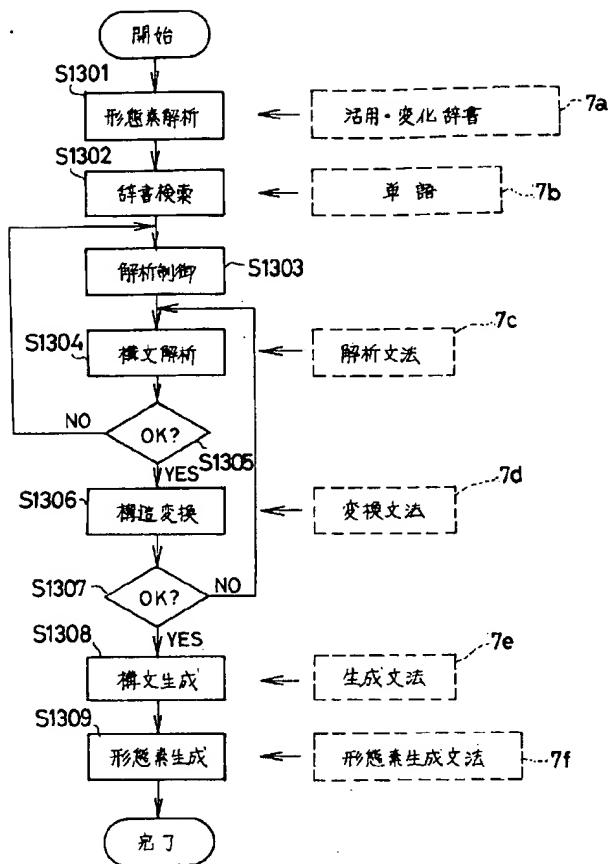
```
                開始
                 │
S1301 ──┐        ▼
        ┌──────────────┐       ┌ ─ ─ ─ ─ ─ ─ ─ ┐
        │   形態素解析   │ ◄───   活用・変化 辞書    ┄┄7a
        └──────────────┘       └ ─ ─ ─ ─ ─ ─ ─ ┘
S1302 ──┐        │
        ┌──────────────┐       ┌ ─ ─ ─ ─ ─ ┐
        │   辞書検索    │ ◄───    単 語       ┄┄7b
        └──────────────┘       └ ─ ─ ─ ─ ─ ┘
         │      │
         │      ▼
        ┌──────────────┐
        │   解析制御    │ ── S1303
        └──────────────┘
                 │
S1304 ─┐         ▼
        ┌──────────────┐       ┌ ─ ─ ─ ─ ─ ┐
        │   構文解析    │ ◄───    解析文法     ┄┄7c
        └──────────────┘       └ ─ ─ ─ ─ ─ ┘
     NO    │
  ◄────── ◇ OK? ◇
            │ YES  S1305
S1306 ─┐    ▼
        ┌──────────────┐       ┌ ─ ─ ─ ─ ─ ┐
        │   構造変換    │ ◄───    変換文法     ┄┄7d
        └──────────────┘       └ ─ ─ ─ ─ ─ ┘
                 │
S1307 ─┐         ▼         NO
         ◇ OK? ◇ ──────►
            │ YES
S1308 ─┐    ▼
        ┌──────────────┐       ┌ ─ ─ ─ ─ ─ ┐
        │   構文生成    │ ◄───    生成文法     ┄┄7e
        └──────────────┘       └ ─ ─ ─ ─ ─ ┘
S1309 ─┐         │
        ┌──────────────┐       ┌ ─ ─ ─ ─ ─ ─ ┐
        │   形態素生成   │ ◄───   形態素生成文法   ┄┄7f
        └──────────────┘       └ ─ ─ ─ ─ ─ ─ ┘
                 │
                 ▼
                完了
```

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This technique is related with the machine translation system into which a user can input the auxiliary information about the expression gestalt of the second language.
[0002]
[Description of the Prior Art] In recent years, the system which machine-translates automatically the input text described by the first language using the computer with the second language attracts attention. Fundamentally, analyze syntax, divide into predetermined batches, such as a word (phrase), and this machine translation system follows a header in morphological analysis, the translation (phrase) which searches a translation dictionary and corresponds for every batch of that, follows [text] a predetermined translation production rule in this, and it joins together, and it is constituted so that that translation may be obtained.
[0003] However, about natural language, since the semantic-analysis technique is not yet established enough, it is very difficult to obtain a suitable translation certainly. For this reason, although he is trying to output selection and the translation candidate who specified in the former noting that two or more translation candidates obtained as a result of a translation are shown to a user and a user is the most suitable, the need that a user (operator) still redoes a reorganization collection to a suitable translation remains.
[0004] Here, the example for which an operator's reorganization collection is needed is considered about a Japanese-English translation. In this case, syntax systems differ greatly in Japanese and English in the first place. There is how "tense" - "a phase" is treated as the remarkable example. In English, these can be regarded as syntax criteria and especially the "phase" is treated syntactically.
[0005] On the other hand, in Japanese, these cannot be dealt with as syntax criteria, but these distinction is performed lexically. "Tense" Although there is "******" - "**" as main auxiliary verbs showing - "a phase", it is, or these do not add peculiar "tense" - "a phase" to a main verb, but the main verb itself can classify variously from a viewpoint of a "phase" and which auxiliary verb adds to what kind of main verb, and "tense" - "a phase" is decided. [of the whole verb phrase]
[0006] Since it is such, about "tense" - "a phase", it can be told to the correspondence nature between English and Japanese that correspondence nature is very thin. Moreover, when it catches from a viewpoint of a translation, it is not necessarily said that what is necessary is just to always translate a Japanese completion phase as an English syntactic completion phase. Depending on the context or the word used, it comes out enough with an unmarked expression, and there are also many a certain things. This is the same also about a progressive aspect.
[0007] Even if it can classify in Japanese with a progressive aspect, it is also common for an unmarked English expression to be appropriate depending on the context and a vocabulary. Sufficient information for such proper translation is not acquired from the text in many cases, and the approach only had at the former entrusting the default processing which the system is preparing in this case.
[0008] Therefore, it was impossible to have become the translation which is not suitable with a natural thing in many cases, furthermore to have judged the contents of the document, and to have changed the contents of the default for every document etc.
[0009] As a following example, the variation of a translation expression of "instantiation [--], such as --," expression is mentioned. Although various expressions could be considered also in English also in Japanese so that there might be nothing if the instantiation expression was uniform, at the former, only selection of a translation was wide opened to the user in the form of a word selection at most. However, selection of a translation expression which changes the structure in a translation was not opened wide, without being settled only by conversion of a translation.
[0010] For example, it is a means by which "--, such as-- " are changed into "-- (--, etc.) ." Therefore, in order to have made such a change, the reorganization collection of the translation had to be carried out. as 3rd example, the variation of translation of an employment expression of Japanese in which auxiliary verb "it carries out (**) - "** (**)" was added is mentioned. since the verb which leads an employment expression also to English exists, it may correspond to transitive verb 1 English word in ** translated using a causative verb, and the form where - "** (**)" "to carry out (**)" was added although it was naturally possible
[0011] About the which translation approach is chosen in that case, conventionally, an opportunity to choose it as a user was not given, but, on the other hand, the system was giving the target one processing. Therefore, the reorganization collection was required if a user's hope was not met.
[0012] As 4th example, the variation of the translation means of a Japanese SA strange noun (noun which functions as attaching "it carries out" to the ending also as a verb) is mentioned. "-- " -- SA strange noun" is performed -- " -- "--" " -- SA strange noun" is performed -- " -- etc. -- or [making it take the gestalt of "a verb + object (noun of operation)" also in a translation to an expression / like] -- or -- "-- " -- SA strange noun" -- it carries out -- " -- there is two possibility referred to as whether to express only with a corresponding verb. However, in the former, this selection was left to the decision of a system, and if it did not meet a user's hope, the reorganization collection of it had to be carried out.
[0013] As 5th example, the alphabetic word of a translation is an abbreviation, and when making a figure follow a finishing [the ending]-as period thing, there is selection of an or [it generates without leaving and generating a tooth space in between or (example: Fig.1) leaving a tooth space (example: Fig.1)]. Although this had a shake by liking of a user, it was impossible to have been only able to

perform to give a target one processing on the other hand in the conventional system, but to have generated and divided by a user's hope. For this reason, the reorganization collection had to be carried out if hope was not met.

[0014] Next, the translation which makes Japanese the second language for the example for which an operator's reorganization collection is needed is considered. Like English, in the language using an alpha character, the initial of the word which constitutes a noun phrase is taken and an acronym, for example, a thing which was called IMF and NATO, is used well. When these occur in the text, as a translation, there is selection whether it is referred to as "IMF" and "NATO" with the alphabet with isomorphism voice or to consider as "International Monetary Fund" and "North Atlantic Treaty Organization."

[0015] Since in the case of this example it is well known so that an acronym is also understood internationally, even if "IMF" and "NATO" are used into a Japanese translation, there is almost no derangement. However, when translating a special technical document, the direction where the Japanese translation corresponding to the noun phrase which developed it for full spelling was used helps an understanding of a user in many cases rather than an initial is used into a translation depending on extent of a user's knowledge.

[0016] Moreover, conversely, if a user is the expert of the field, a translation will feel it refreshed and the direction where an acronym is used will be able to say that it is readable.

[0017] About the shake of the demand to the translation by such user, in the conventional system, processing could not be affected at all, either, but the system established the regulation, and it was determined what kind of translation is generated within limits which can be judged according to the situation in one sentence. Since a user cannot specify the contents of processing for every document with a natural thing, it became and a reorganization collection is [that it is hard to understand a translation] often needed.

[0018]
[Problem(s) to be Solved by the Invention] Although a machine translation system is a system translated into the text between different language, between different language, the variation also to a transcription with them occurs. [there are many from which an expression gestalt differs greatly, and various] However, in the conventional system, it cannot respond at all to such a situation.

[0019] That is, since a user cannot specify the contents of processing for every document with a natural thing, it became and a reorganization collection is [that it is hard to understand a translation] often needed [the conventional system established the regulation, it was extent which determines what kind of translation is generated within limits which can be judged according to the situation in one sentence, and].

[0020] Thus, according to conventional equipment, processing of "tense" - "a phase" and the other outputs which a user desires about what has a variation in the expression approach are not carried out in many cases, the reorganization collection had to be carried out more often, and translation effectiveness was bad.

[0021] then, the place made into the purpose of this invention -- Japanese expression "-- ******" and "-- it was carried out -- " -- the art about "tense" - "a phase" -- the translation approach of a Japanese expression "-- --" etc., and the translation approach of Japanese expression "-- (**) ****" - "-- (**) **" -- The translation approach of performing Japanese expression " "a SA strange noun"" (and expression according to this), The expression approach at the time of the ending making a figure follow the English Version word with the gestalt of the abbreviation finished as the period, and generating, By granting a user option about whether you want me to perform what kind of processing to a system about what has a variation in the expression approaches, such as the translation approach of the original word of abbreviations, such as an acronym The translation of the expression which a user desires can be obtained and it is in offering the machine translation system which can lessen the amount of a reorganization collection as much as possible.

[0022]
[Means for Solving the Problem] This invention for solving the above-mentioned technical problem is constituted as follows. That is, in the machine translation system which translates the text of the first language given into the text of the second language using the knowledge information for translation processing, a translation expression conditioning means to set up the conditions about a translation expression, and an expression conversion means to change a decodement into the translation expression by this set-up condition are established and constituted in the 1st.

[0023] "-- ******" ****** [in the Japanese text] To the 2nd Moreover, when the becoming description expression expresses the completion condition, the completion phase "-- ******" which uses this for an expression with the second language -- the considerable desired contents of translation -- "-- ******" ****** [in the Japanese text] When the becoming description expression expresses the advance condition, the progressive aspect "-- ******" used for an expression with the second language -- the considerable desired contents of translation -- "-- in the Japanese text -- it was carried out -- " -- "-- used for applicable expression translation with the second language of a description expression -- it was carried out -- " -- the considerable desired contents of translation -- As opposed to other description expressions equivalent to the description expression and this instantiation expression [in the Japanese text] "-- --" etc. becoming employment expression [in the contents of instantiation expression translation of the request used for applicable expression translation with the second language, and the Japanese text] "-- (**) ****" - "-- (**) **" -- the contents of translation of the request of the employment expression concerned used for applicable expression translation with the second language of a description expression -- A translation expression conditioning means to set up at least one of the contents of translation of the request used for applicable expression translation with the second language as translation conditions to the description expression which consists of a "SA strange noun + transitive verb" in the Japanese text, It constitutes from an expression conversion means which carries out transform processing of the applicable part in a decodement to the translation expression by this set-up condition.

[0024] While making a native language into the first language furthermore the 3rd and making a foreign language into the second language In the machine translation system which translates the text of the first language given into the text of the second language A translation expression conditioning means to set up the abbreviation and figure connection conditions of whether to make it accompanied by the tooth space between words as translation conditions in case the ending makes a figure follow a translation with the gestalt of the abbreviation finished as a period and generates, It constitutes from an expression conversion means which carries out transform processing of the applicable part in a decodement to the translation expression by this set-up condition.

[0025] Moreover, while making a foreign language into the first language the 4th and making a native language into the second language In the machine translation system which translates the text of the first language given into the text of the second language using the knowledge information for translation processing The translation expression conditioning means which carries out a selection setup of

whether whether the word of the abbreviation notation in the text by the first language being considered as the abbreviation notation of a sale order online processing system and isomorphism voice and an abbreviation are changed into the translation which consists of a native language character string corresponding to what was changed into full spelling, It constitutes from an expression conversion means which carries out transform processing of the applicable part in a decodement to the translation expression by this set-up condition.

[0026]

[Function] In such a configuration, if the text (text of the first language) which translation expression conditioning is made in the 1st configuration, and serves as a candidate for a translation is given, this machine translation system will translate the text into the second language, and will generate a decodement, and an expression conversion means will carry out transform processing further to the translation expression which followed said set-up translation expression conditions about this decodement.

[0027] Moreover, the translation approach in case, as for a translation expression conditioning means, a Japanese expression "-- ******" expresses a completion phase in the 2nd configuration, as for the conditioning of a translation expression, The translation approach in case a Japanese expression "-- ******" expresses a progressive aspect, the translation approach of a Japanese expression "-- ******", the translation approach of a Japanese expression "-- --" etc., and the translation approach of Japanese expression "-- (**) ****" - "-- (**) **" (employment expression) -- A desired setup is possible about the translation approach of performing Japanese expression " "a SA strange noun"" (and expression according to this), therefore the decodement in the contents of translation specified by a user can be obtained by these setup.

[0028] It can be finely set as the condition called translation approach of a original word that the first language had the gestalt of abbreviations, such as an acronym, in the translation whose second language is Japanese in English when making a native language into the first language and translating a foreign language as the second language furthermore in the 3rd configuration etc., and, thereby, the decodement of a desired gestalt can be occurred now.

[0029] Furthermore, in the 4th configuration, make a foreign language into the first language and a native language is made into the second language. In translating the text of the first language given into the text of the second language, the word of the abbreviation notation in the text by the first language It can translate with the setting gestalt by carrying out a selection setup of whether whether it considering as the abbreviation notation of a sale order online processing system and isomorphism voice and an abbreviation are changed into the translation which consists of a native language character string corresponding to what was changed into full spelling.

[0030] Therefore, since a translator can generate the translation of the expression considered as a request, the parts which must carry out a reorganization collection to a translation result can be reduced sharply, and large improvement in effectiveness of a translation can be aimed at.

[0031]

[Example] Hereafter, one example of this invention is explained with reference to a drawing. Drawing 1 is the block diagram showing the whole machine translation system configuration concerning one example of this invention.

[0032] As shown in drawing, this system As an operator's control unit The processing about selection and assignment of the text storage section 2 which memorizes the text inputted from the input sections, such as the ** keyboard 1, and this keyboard 1 or a communication device which is not illustrated, the translation storage section 3 which memorizes a translation, the edit control section 4 which manages control of this whole system, the translation section 5 which performs translation processing, and a translation expression It controls. The fair copy of the display and control section 8, the display 9 and the text which control the display of the translation expression assignment control section 6 which controls processing in said translation section 5, the translation dictionary 7 which held the knowledge information used for translation processing, the text, a translation, etc., or a translation etc. is made. It has the printing section 10 grade for outputting as hard copy, and is constituted.

[0033] Moreover, the translation condition storage section 11 is formed further, and it has come to be able to carry out conditioning suitably by the keyboard 1 and the display 9 in this example. And the translation section 5 enables it to have translated the text according to the conditions set as this translation condition storage section 11.

[0034] As the above-mentioned keyboard 1 is shown in drawing 2 , the letter key 12 for text inputs, such as Japanese or English, to the actuation side top, The translation directions key 13 for translation directions, and the editing keys 14-19 which make deletion of a document, connection, etc., In order to operate various functions, such as a translation display, it has the cursor control keys 29 and 30 for a function key 20 - 27 --, the cursor movement key 28 for general cursor actuation, and other cursor control, and 31 --, and is constituted.

[0035] Drawing 3 is the explanatory view showing an example of the layout of screen 9A of a display 9. As shown in drawing, the input text is displayed on the text viewing area A1 on the left-hand side of a screen. The obtained translation is displayed on the location corresponding to the translation viewing area A2 on the right-hand side of a screen as the text as a result of translation processing. Moreover, edit field A3 for displaying information required for various edits is prepared in the screen upper part.

[0036] Drawing 4 is a flow chart which shows an example of the flow of dialogue translation processing centering on the edit control section 4. In dialogue translation processing, an operator can perform the input of the text, and the editing task of a corresponding translation suitably.

[0037] If actuation of the edit control section 4 is explained according to drawing 4 , it is supervising whether the edit control section 4 has a certain key input from a keyboard 1 first, or the completion signal of a translation is received from the translation section 5 (steps S401-S405), and when there is a certain key input from a keyboard 1, processing corresponding to it will be performed.

[0038] When an operator operates either of the function keys 20-27 on a keyboard 1, this is detected (step S405) and processing corresponding to the function key is performed (step S406).

[0039] Moreover, when an operator operates either of the editing keys 14-19 on a keyboard 1, the edit control section 4 detects this (step S404), and performs processing corresponding to the editing key (step S407).

[0040] When an operator operates the control key of a cursor key 28 or others, it is performing processing of step S408, and processing for migration of the cursor corresponding to a key stroke and other processings are performed.

[0041] Moreover, if an operator operates the letter key 12 on a keyboard 1, for example, a Japanese sentence is inputted as the text, after

each letter-key 12 key in is detected (step S403), a corresponding character code will be set to the input buffer which is not illustrated in the sequential edit control section 4 (step S409). This input text is displayed on the text viewing area A1 of a display 9 through a display and control section 8 (step S410).

[0042] If the keys of the translation directions key 13 on a keyboard 1 are touched when the input of one sentence is completed when an operator is arbitration for example, this key is detected (step S402), and to the translation section 5, the edit control section 4 supplies the text in an input buffer, and directs initiation of translation processing (step S411).

[0043] In the middle of a text input, when correction, insertion, deletion, etc. need to be input edited, after moving cursor to a desired edit part by actuation of the cursor key 28 on a keyboard 1, this can be performed using the editing key of the insert key 14 and delete key 15 grade. Of course, the text storage section 2 can also be made to memorize the text in an input buffer. If the completion signal of a translation is detected from the translation section 5 by processing of step S401, the edit control section 4 will progress to step S412, and will display a delivery translation on a display and control section 8 for the translation candidate and auxiliary information which were acquired from the translation section 5.

[0044] Moreover, while a display and control section 8 displays a translation candidate as the input text in the translation viewing area A2 in a corresponding location, when there is auxiliary information, the operator enables it to identify that by carrying out highlighting of the translation by high brightness, reversal, or color display.

[0045] From this condition, if there is a stroke of the editing keys 14-19 on a keyboard 1, the edit control section 4 will detect this (step S404), and edit processing corresponding to each key will be performed to the word directed with cursor at this time, or a phrase (step S407).

[0046] In edit processing, an alphabetic character is inserted in front of a cursor location by actuation of the insert key 14, for example. The character string of the range which cursor is directing is deleted by actuation of a delete key 15. By actuation of a navigation key 16, it moves in the range which cursor is directing.

[0047] Moreover, what is necessary is just to operate the cancellation key 17 to make effectiveness of the above-mentioned keys 14, 15, and 16 into an invalid. other dependency candidates of the phrase which cursor is directing are displayed further again using auxiliary information -- cooking -- what is necessary is just to operate the dependency key 18

[0048] Moreover, the following functions are realizable with the function key on a keyboard 1. For example, by operating the translation display key 20, the translation can be displayed to the word in a translation, and a dictionary can be displayed to the word in the text by actuation of the dictionary display key 21. Moreover, registration of a neologism and an idiom can be performed by actuation of the dictionary registration key 22, and the word and idiom registered by dictionary registration can be deleted by actuation of the dictionary delete key 23.

[0049] When a translation furthermore goes wrong, the partial translation can be displayed by actuation of the partial translation key 24.

[0050] moreover, as a cursor key Cursor The cursor movement key 28 moved in each direction, respectively, There is enlarging-or-contracting key 31 grade for expanding the size of the navigation key 30 between fields for moving cursor between the unit exchange key 29 which switches the unit which cursor moves, and each viewing area, and cursor per contraction or word per alphabetic character. Cursor can be moved in each direction, respectively, the unit which cursor moves can be switched, cursor can be moved between each viewing area, or size of cursor can be made to expand per contraction or **** per alphabetic character.

[0051] Therefore, an operator can get a decodement interactively, performing the input and edit processing of a translation of the text suitably.

[0052] In the system constituted as mentioned above in this example for example, a Japanese-English translation -- Japanese expression "-- ******" and "-- it was carried out -- " -- the art about "tense" - "a phase" -- the translation approach of a Japanese expression "-- --" etc., and the translation approach of Japanese expression "-- (**) ****" - "-- (**) **" -- The translation approach of performing Japanese expression " "a SA strange noun"" (and expression according to this), About the expression approach at the time of the ending making a figure follow the English Version word with the gestalt of the abbreviation finished as the period, and generating, in an English-Japanese translation About the translation approach with the gestalt of abbreviations, such as an acronym, of an alphabetic word, the selection and assignment of processing which a system should take out of a variation are performed, and it is constituted so that control of translation processing may be made according to it.

[0053] That is, about each above-mentioned translation expression approach, it precedes starting a translation of a certain document, selection and assignment of various translation expressions are performed, and, subsequently translation procedure is made to perform in the machine translation system of this example.

[0054] Drawing 5 conditioning screen 9B of the translation approach in case a Japanese expression "-- ******" expresses a completion phase Drawing 6 moreover, conditioning screen 9C of the translation approach in case a Japanese expression "-- ******" expresses a progressive aspect moreover, drawing 7 -- Japanese expression "-- it was carried out -- " -- conditioning screen 9D of the translation approach Drawing 8 moreover, conditioning screen 9E of the translation approach of a Japanese expression "-- --" etc. moreover, drawing 9 conditioning screen 9F of the translation approach of Japanese expression "-- (**) ****" - "-- (**) **" Conditioning screen 9G of the translation approach of moreover, drawing 10 performing Japanese expression " "a SA strange noun"" (and expression according to this) Moreover, conditioning screen 9H of the expression approach at the time of drawing 11 making a figure follow the English Version word with the gestalt of the abbreviation which the ending has finished as the period, and generating, and drawing 12 show conditioning screen 9I about the translation approach with the gestalt of abbreviations, such as an acronym, of a word, respectively.

[0055] Precede starting the translation by the translation section 5, and the edit control section 4 displays each conditioning screen on a display 9 in order through a display and control section 8. When conditioning is demanded from an operator and an operator does a selection setup of the conditions from a keyboard 1 according to this display screen The selection and assignment of processing which a system should take out of these variations can be performed, and the edit control section 4 is constituted so that translation processing may be controlled according to the setups.

[0056] That is, about each above-mentioned translation expression approach, it precedes starting a translation of a certain document, selection and assignment of various translation expressions are performed, and, subsequently translation procedure is made to perform in the machine translation system shown in this example.

[0057] Therefore, if the document which a user (operator) translates is specified, the translation expression assignment control section 6 can display in order the screens 9B, 9C, 9D, 9E, 9F, 9G, 9H, and 9I as shown in drawing 5 which urges assignment to a display 9 - drawing 12 through the edit control section 4 and a display and control section 8, or can be made to display them in order.

[0058] And the translation approach as shown in drawing 5 - drawing 12 , in case a Japanese expression "-- ******" expresses a completion phase, respectively, the translation approach in case a Japanese expression "-- ******" expresses a progressive aspect, and Japanese expression "-- it was carried out -- " -- the translation approach -- the translation approach of a Japanese expression "-- --" etc., and the translation approach of Japanese expression "-- (**) ****" - "-- (**) **" (employment expression) -- The translation approach of Japanese expression ""a SA strange noun"+ Carrying out" (and expression according to this), The expression approach at the time of the ending making a figure follow the English Version word with the gestalt of the abbreviation finished as the period, and generating, The conditioning input screen which stimulates selection and assignment of processing to set it as a system out of each variation of the translation approach with the gestalt of abbreviations, such as an acronym, of an alphabetic word is displayed in order.

[0059] And from a keyboard 1, if there is a user's assignment input, those contents are once passed to the translation expression assignment control section 6 through the edit control section 4, and the translation expression assignment control section 6 will receive these contents of assignment as setups, and will pass the setups information corresponding to these setups to the translation section 5.

[0060] The condition storage section 11 for memorizing various conditions in this example is formed here. To each memory areas 11a, 11b, 11c, 11d, 11e, 11f, 11g, and 11h in this condition storage section 11 (1) Completion phase "-- ******" translation conditions of how to express in the second language, when making Japanese into the first language and the expression "-- ******" in the Japanese text expresses the completion condition.

[0061] (2) Progressive aspect "-- ******" translation conditions of how to express in the second language, when making Japanese into the first language and the expression "-- ******" in the Japanese text expresses the advance condition.

[0062] (3) the case where Japanese is made into the first language -- setting -- "-- in the Japanese text -- it was carried out -- " -- ** -- "-- of how to express the expression to say in the second language --" translation conditions carried out.

[0063] (4) The instantiation expression translation conditions of how to express the expression in the Japanese text (or expression according to this) "called [--] -- etc." in the second language, when making Japanese into the first language.

[0064] (5) the employment expression called "-- (**) ****" - "-- (**) **" when making Japanese into the first language is expressed how in the second language -- those employment expression translation conditions. [in the Japanese text]

[0065] (6) the case where Japanese is made into the first language -- setting -- the inside of the Japanese text -- "-- " -- SA strange noun" is performed -- " -- ** -- the expression (or it includes "it performing" besides [which is the expression according to this] "carrying out", "it giving", "it making", "it carrying out" out, etc.) to say is expressed how in the second language -- those SA strange noun translation conditions.

[0066] (7) The abbreviation and figure connection conditions which said whether make it accompanied by the tooth space between words, or not make it follow when English was made into the second language, and the ending made a figure follow a translation with the gestalt of the abbreviation finished as the period and generated.

[0067] (8) The word-selection conditions of an abbreviation which is referred to as whether to generate the thing of which format as a translation corresponding to it among language, the translation of the same abbreviation of a gestalt, and the translation that consists of a Japanese character string corresponding to what changed the abbreviation into full spelling by there being a word which has the gestalt of an abbreviation in the English text when making English into the first language and making Japanese into the second language.
It has come to be able to carry out a ********** storage setup, and registration of the conditions which the operator inputted by the monograph affair setting input screen besides the setting screen information of the various above setups has come be made to the memory areas 11a-11h in the condition storage section 11.

[0068] And while being able to perform setting registration of conditions in the condition storage section 11 by being able to display drawing 5 - drawing 12 on a display 9 according to the these memory areas [in the condition storage section 11 / 11a-11h] contents of storage, and making an operator choose it as the basis of control of the edit control section 4 by the keyboard 1 according to the contents of the screen, it enables it to set the contents of a default as the translation expression assignment control section 6.

[0069] Therefore, the already set-up conditions can be used as they are by using this, and the time and effort set up at every translation by this can be saved.

[0070] After finishing setting mode, the edit control section 4 is controlled to shift to translation processing. Drawing 13 is a flow chart which shows the flow of the processing in the translation section 5. If processing of the translation section 5 is explained according to this flow chart, in the translation processing in the translation section 5, morphological analysis of step S1301 will be carried out first. In this morphological analysis, the word which has change in the ending etc. is changed into that original form (basic form) to the input text using activity / change dictionary 7a of the translation dictionary section 7.

[0071] Next, it moves to processing of dictionary retrieval of step S1302. The word and word-dictionary 7b of the translation dictionary section 7 are searched with this dictionary retrieval for every word which constitutes the input text, and information, such as that part of speech, translation, etc., is searched for by it.

[0072] Next, it moves to analysis control of step S1303, and processing which sends the acquired information besides a part of speech on a word and an idiom which constitutes an input statement to a syntax analyzer is performed here as a result of processing of the dictionary retrieval in step S1302.

[0073] Next, it moves to processing of syntax analysis of step S1304. Processing of this syntax analysis analyzes the structure of the text using analysis syntax 7c of the translation dictionary section 7, and generates the conceptual structure of the text. Since it judges whether analysis succeeded at step S1305, when analysis goes wrong, it returns to analysis control of step S1303 through this step S1305.

[0074] After analysis is completed with no problems, it moves to processing of the structural transition of step S1306 next. Processing of structural transition changes the conceptual structure of the first language into the conceptual structure of the second language using 7d of conversion syntax of the translation dictionary section 7.

[0075] In processing of this structural transition, the translation section 5 performs structure transform processing in the translation which makes Japanese the first language according to the conditions specified by [which is given from the translation expression

assignment control section 6] a user. Namely, the translation approach in case a Japanese expression "-- ******" expresses a completion phase from the contents translation expression assignment control section 6, The translation approach in case a Japanese expression "-- ******" expresses a progressive aspect, the translation approach of a Japanese expression "-- ******", the translation approach of a Japanese expression "-- --" etc., and the translation approach of Japanese expression "-- (**) ****" - "-- (**) **" (employment expression) -- Moreover, it sets to the translation which makes English the first language and makes Japanese the second language. the contents of user assignment about the translation approach of performing Japanese expression " "a SA strange noun"" (and expression according to this) -- If the contents of user assignment about the translation approach with the gestalt of abbreviations, such as an acronym, of an alphabetic word are sent, the translation section 5 will process structural transition and translation decision according to the assignment.

[0076] If processing of the structural transition and translation decision in step S1306 finishes, the translation section 5 judges the processing result (step S1307), when rejected, will return to syntax analysis of step S1304, and will redo processing.

[0077] If processing of structural transition and translation decision finishes with no problems, it will move to processing of the functor generation of step S1308 to a degree. In processing of this functor generation, according to generative grammar 7e of the translation dictionary section 7, the word order of the surface sentence of the second language is determined from the conceptual structure of the second language, and it changes into a word train.

[0078] In here, from the translation expression assignment control section 6, if a user's contents of assignment are given about the expression approach at the time of making a figure follow the English Version word with the gestalt of the abbreviation which the ending has finished as the period, and generating, according to the assignment, generation of the tooth space between this abbreviation and a figure will be controlled.

[0079] Next, it moves from the translation section 5 to processing of morphological generation of step S1309. In processing of this morphological generation, change of the word form of a word etc. is carried out by 7f of morphological generative grammar of the translation dictionary section 7, and a decodement is completed.

[0080] Thus, the decodement of a translation expression which uses the information on the translation dictionary section 7, and translates according to the default or the conditions which were set up of the translation expression assignment control section 6, and balances the specified conditions is generated. And the result that the translation section 5 carried out translation processing is held at the temporary storage file (temporary file) in the translation storage section 3, is displayed on a display 9 through a display and control section 8, and is memorized by the translation storage section 3 as a file according to the command from an operator while being outputted to the edit control section 4 and held here temporarily. Moreover, according to the command from an operator, the edit control section 4 is outputted also to the printing section 10, and is printed.

[0081] After the processing to all the texts for a translation mentioned above is completed, it returns to the condition of the waiting for a command.

[0082] Thus, since a translator can generate the translation of the expression considered as a request by the ability specifying various kinds of translation expressions according to a document beforehand, the parts which must carry out a reorganization collection to a translation result can be reduced sharply, and large improvement in effectiveness of a translation can be aimed at.

[0083] Thus, this machine translation system translates the text of the first language given into the text of the second language, and establishes and constitutes a translation expression conditioning means to set up the conditions about a translation expression, and an expression conversion means to change a decodement into the translation expression by this set-up condition.

[0084] And if the text (text of the first language) which translation expression conditioning is made and serves as a candidate for a translation is given, this machine translation system will translate the text into the second language, and will generate a decodement, and it will be said further that transform processing of the expression conversion means is carried out to the translation expression which followed said set-up translation expression conditions about this decodement.

[0085] The translation approach in case, as for the conditioning of a translation expression, a Japanese expression "-- ******" expresses a completion phase, The translation approach in case a Japanese expression "-- ******" expresses a progressive aspect, the translation approach of a Japanese expression "-- ******", the translation approach of a Japanese expression "-- --" etc., and the translation approach of Japanese expression "-- (**) ****" - "-- (**) **" (employment expression) -- Moreover, it sets to the translation which makes English the first language and makes Japanese the second language. the contents of user assignment about the translation approach of performing Japanese expression " "a SA strange noun"" (and expression according to this) -- It can be finely set as the condition called translation approach with the gestalt of abbreviations, such as an acronym, of an alphabetic word etc., and, thereby, the decodement of a desired gestalt can be occurred now.

[0086] Therefore, since a translator can generate the translation of the expression considered as a request, the parts which must carry out a reorganization collection to a translation result can be reduced sharply, and large improvement in effectiveness of a translation can be aimed at.

[0087] In addition, this invention is not limited to the above-mentioned example, in the range which does not deviate from the summary, can deform variously and can be realized. Though natural, the alternative shown to a user may be except what was mentioned as the above-mentioned example.

[0088] Moreover, when precede starting a translation, each conditioning screen is displayed on a display in order, conditioning is demanded from an operator and an operator does a selection setup of the conditions from a keyboard according to this display screen selection of the processing which a system should take out of these variations -- and, although it enabled it to specify It is also possible for it to be made to advance a translation on the conditions which prepared the conditioning file which recorded the contents of conditioning beforehand, specified this conditioning file, and followed those contents. In this case, what is necessary is to read the contents of the specified conditioning file into an edit control section, and just to constitute so that translation processing may be controlled according to those setups.

[0089] Although this invention explained the Japanese-English translation to the example, naturally it can be applied to other language further again.

[0090]

[Effect of the Invention] As mentioned above, about each item for which the system is prepared according to the class of document which a user makes applicable to a translation according to this invention as explained in full detail, if the translation expression for which it asks is chosen and specified, a reorganization collection is unnecessary, and the machine translation system which can obtain now the suitable translation result of the transcription considered as a request can be offered.

[Translation done.]